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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Stewart Frederick Bryant

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EXAMINER

SOL, ANTHONY M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/620,866	Applicant(s) BRYANT ET AL.	
	Examiner ANTHONY SOL	Art Unit 2465	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21, 23-26 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-21, 23-26 and 29-31 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13, 15-18, 28 and 32 is/are rejected.
- 7) ☒ Claim(s) 5 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/3/2009 has been entered.
- Claims 1, 9, 10, and 18 have been amended.
- Claims 1-21, 23-26, and 28-32 remain pending.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18, 28, and 32 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention: process, machine, manufacture, and composition of matter. Transitory forms of signal transmission (for example, a propagating electrical or electromagnetic signal *per se*) is not one of the statutory categories (see INTERIM EXAMINATION INSTRUCTIONS FOR EVALUATING SUBJECT MATTER ELIGIBILITY UNDER 35 U.S.C. § 101, August 2009). Specifically, claims 18, 28, and 32 recite "a computer-readable medium," wherein the "medium" is defined in the specification at paragraph [0072] as follows:

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[0072] Various forms of **computer readable media** may be involved in carrying one or more sequences of one or more instructions to processor 144 for execution. For example, the instructions may initially be carried on a magnetic disk of a remote computer. The remote computer can load the instructions into its dynamic memory and send the instructions over a telephone line using a modem. A modem local to computer system 140 can receive the data on the telephone line and use an infrared transmitter to convert the data to an infrared signal. An infrared detector coupled to bus 142 can receive the data carried in the infrared signal and place the data on bus 142. Bus 142 carries the data to main memory 146, from which processor 144 retrieves and executes the instructions. The instructions received by main memory 146 may optionally be stored on storage device 150 either before or after execution by processor 144. (emphasis added)

[0073] Interface 159 also provides a two-way data communication coupling to a network link that is connected to a local network. For example, the interface 159 may be an integrated services digital network (ISDN) card or a modem to provide a data communication connection to a corresponding type of telephone line. As another example, the interface 159 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN. Wireless links may also be implemented. In any such implementation, the interface 159 sends and receives electrical, electromagnetic or optical signals that carry digital data streams representing various types of information. (emphasis added)

Thus, claims 18, 28, and 32 are signal claims, which are non-statutory. The applicant amended the specification on an amendment dated 3/11/2008 to amend paragraphs [0070], [0071], and [0074] in an attempt to remove reference to language relating to signals; however, paragraphs [0072] and [0073] also contain reference to signals as emphasized above.

The applicant may amend paragraphs [0072] and [0073]. Another option is to amend claims 18, 28, and 32 by adding the limitation "non-transitory" to the claims, which the USPTO suggests in "Subject Matter Eligibility of Computer Readable Media" dated January 26, 2010, wherein it states that "[s]uch an amendment would typically not raise the issue of new matter."

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 6-10, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pub. No. US 2004/0001508 A1 ("Zheng") in view of Pub. No. US 2009/0080431 A1 ("Rekhter").

Regarding claims 1, 9, 10, and 18,

Zheng shows in fig. 1 a forwarding node 30 and an end point 40 both in the same data communication network and both transmitting tunneled packets using the same data communication protocol (see in particular para. 78, *These network nodes may be part of the same communication network*; see paras. 33 and 75-79)

Zheng discloses recognizing, based on routing protocol information, a tunneled packet comprising an address directly identifying a neighbor node to the forwarding node as the end point (para. 80, *the original packet is routed from the end point ... (i.e. the decapsulator unit 30) to the receiver 40 indicated in the inner header as the destination*).

Zheng further discloses removing the header (para. 79, *The decapsulator unit 30*

2. *decapsulates the routing packet (step S70). This means that the outer header*
3. *is removed from the packet. Then, the decapsulator unit 30 decompresses the*
4. *remaining compressed inner header in order to recover the original packet (step*

5. S80)) and forwarding the payload to the neighbor node using the address directly identifying the neighboring node and without a lookup of a forwarding address (para. 80, *the original packet is routed from the end point ... (i.e. the decapsulator unit 30) to the receiver 40 indicated in the inner header as the destination*).

Zheng does not disclose that the node 30 that performs the decapsulation of the header is a neighbor of the tunnel end point.

Rekhter discloses a penultimate hop popping method wherein the adjacent LSR to the egress router performs the removal of the tunnel label (claimed *removing the header*)(see fig. 2 and paras. 15 and 48).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the header removal step in a tunnel as disclosed by Zheng to perform such step at a neighboring node of the tunnel end point as taught by Rekhter. One skilled in the art would have been motivated to make the combination lessen the load on the tunnel end point as is well known in the art of packet transmission, particularly in penultimate hop popping.

Regarding claims 6, 8, 15, and 17,

Zheng discloses a tunnel between a receiving node and a sending node using encapsulation (Abstract).

Regarding claims 7 and 16,

Zheng does not disclose that the tunneled packet is configured as one of IP/GRE/MPLS/IP-payload or IP/GRE/IP/GRE/IP-payload.

Rekhter discloses that the tunnel could be a GRE encapsulated MPLS tunnel between the ingress PE router R1 and the egress PE router R2. In this case, the ingress PE router R1 would be adjacent to the egress PE router R2, and only the TLS label would be used. In such a case, the intervening network need only carry IP packets (para. 50).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the header removal step in a tunnel as disclosed by Zheng to be used in a GRE encapsulated MPLS tunnel carrying IP packets as taught by Rekhter. One skilled in the art would have been motivated to make the combination since GRE tunnels are widely used in MPLS networks to tunnel IP packets as is well known in the art.

4. Claims 2-4 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng in view of Rekhter, and further in view of Pub. No. US 2008/0192762 ("Kompella").

Regarding claims 2-4 and 11-13,

Zheng and Rekhter do not explicitly disclose recording at the forwarding node one or more neighbor nodes comprising tunnel endpoints and permission to remove headers for tunneled packets to the or each recorded neighbor node (claims 2 and 11). Zheng and Rekhter also do not explicitly disclose that the recording step is carried out

manually (claims 3 and 12) or upon receipt of a notification from a tunnel end point (claims 4 and 13)

Kompella discloses having a record entry for indication to pop a label for a neighbor (claims 2 and 11; para. 135, *If the label carried in the Mapping message is an Implicit NULL label, the restarting node searches its MPLS forwarding table for an entry that indicates Label pop (means no outgoing label), and the next hop equal to one of the addresses (next hops) received in the Address message from the peer...*

Note that claims 3 and 12 recite a manual recording. Such manual entry of tables is routine in network configuration.

Kompella further discloses receipt of a notification from a tunnel end point (claims 4 and 13; para. 135, *the restarting node no longer marks the entry as stale, it associates the incoming label from that entry with the FEC received in the Label Mapping message from the peer node (e.g., neighbor)*

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the header removal system of Zheng and Rekhter to have a record entry of whether to pop a label for a neighbor node as taught by Kompella. One skilled in the art would have been motivated to make the combination since such a record is routinely used in penultimate hop popping (Kompella, para. 135).

Allowable Subject Matter

5. Claims 19-21, 23-26 and 29-31 are allowed.

6. Claims 28 and 32 allowable over prior art but are rejected under 35 U.S.C. 101 as detailed above.
7. Claims 5 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim **and** any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY SOL whose telephone number is (571)272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/A. S./
Examiner, Art Unit 2465
2/18/2010

/Jayanti K. Patel/
Supervisory Patent Examiner, Art Unit 2465